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AWARD NUMBER: MIPR 5MSNCM5123

TITLE: MSAT Lead Investigator Support

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REPORT DATE: September 2006

TYPE OF REPORT: Annual

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for Public Release;
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REPORT DOCUMENTATION PAGE			<i>Form Approved</i> OMB No. 0704-0188		
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1. REPORT DATE (DD-MM-YYYY) 01-09-2006		2. REPORT TYPE Annual		3. DATES COVERED (From - To) 1 Sep 2005 – 31 Aug 2006	
4. TITLE AND SUBTITLE MSAT Lead Investigator Support			5a. CONTRACT NUMBER MIPR 5MSNCM5123		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S) Frank Garland, Ph.D. E-Mail: garland@nhrc.navy.mil			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Health Research Center San Diego, California 92186-5122			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland 21702-5012			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT Medical Situational Awareness in the Theater (MSAT) will evaluate existing technologies that can provide enhanced operational medical situational awareness to Combatant Commanders. Presently, Combatant Commanders lack timely, complete, actionable health information for operational decision-making, thereby putting troops at unnecessary risk to illness or injury and jeopardizing force strength and morale. Current stovepipe information systems do not provide timely trend analysis, access to clinical care, or immediate warning alerts that identify risks. Rather, these disparate systems require intensive human manipulation, which causes systems to be poorly used. The approach will be to develop and enact proper integration and configuration to fuse current and emerging technologies and apply artificial intelligence and computerized decision support systems to transform collected, scattered data into timely, actionable information and knowledge. The timely analysis of the disparate data in existing service medical, environmental and personnel databases and the reporting of results will allow protective measures to be implemented and factored into the medical and operational status of deployed Joint Forces. The ACTD will evaluate and exploit applicable commercial products, technologies including: fusion applications; artificial intelligence capabilities; web-enabling technologies; sensor and point-of-use data capture technologies; and technologies for the capture and analysis of physiological changes.					
15. SUBJECT TERMS No subject terms provided.					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 20	19a. NAME OF RESPONSIBLE PERSON USAMRMC
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (include area code)

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INTRODUCTION

Operational Commanders lack timely, complete, actionable health information for operational decision-making, thereby putting troops at unnecessary risk to illness or injury and jeopardizing force strength and morale. The current stovepipe information systems do not provide timely trend analysis or immediate warning alerts that identify risks. Rather, these disparate systems require intensive human manipulation and cannot aggregate the necessary information for effective decision making in a timely manner. These drawbacks cause the systems to be poorly used and somewhat unreliable since all required data to make a decision is not available as needed.

Data domains do not share information and are not integrated well include medical intelligence, occupational and environmental hazard reporting, chemical and biological threat warnings, trauma reporting, disease and non-battle injury (DNBI) data, personnel unit and location data. These data are generally collected by different agencies, often sporadically, and are not universally shared. This makes it an impossible task to sort, understand, and generate actionable knowledge within operational timeframes from the vast amount of raw data available.

The fundamental purpose of the Medical Situational Awareness in the Theater (MSAT) capability is to provide Commanders health related decision support and analytical tools to assist during plan development and operations in assessing and mitigating warfare operational degradation and vulnerabilities to more effectively and efficiently assess risk and allocate scarce resources. MSAT provides health related information to write and execute operational plans. Additionally, it provides the Commander and staff enhanced knowledge of the health readiness of their forces by generating timely information on existing and emerging medical threats and health-related trends during all phases of a joint/coalition operation so that when warranted, operational plans may be adjusted on a real-time basis. It provides the ability to conduct situational awareness on health related issues within the theater. MSAT provides appropriate and timely access to relevant health related information. It will also be used to identify personnel exposed to chemical, biological, radiological, nuclear, enhanced explosives and occupational/environmental hazards and provide that information to appropriate leadership. This will enhance the ability of operational leaders to (a) assure exposed personnel can be located, informed and treated; and, (b) allow the real-time adjustment of operational plans.

MSAT supports assessment of military operations with associated-related risk levels, as well as the preparation for employment of medical defenses and resources. MSAT will provide the Commander health related information during the planning/pre-deployment/deployment/post deployment phase of an operation. This will include information such as health service support requirements, known environmental/health hazards, intelligence, health related countermeasures to known endemic illnesses and unconventional threats, logistics data, medical intelligence and the ability to conduct adaptive planning and course of action analysis with the information obtained. Additionally, MSAT will allow the Operational Commander, his staff, and subordinates the ability to view all these capabilities and issues on the most functional and accessible

platform, either the current Global Command and Control System (GCCS) Common Operational Picture (COP), Global Combat Support System (GCSS) Web Portal, or the Joint Medical Work Station II (JMeWS II) capability.

Collaborative planning and execution monitoring tools are required. MSAT will provide consolidated situational awareness and links to collaborative planning tools for improved health related support management, and intelligent decision aids for the planning and execution of a Commander's concept of operation. This capability enables the Commander — supported by command surgeons and their staffs, supporting Commanders and their staffs, the Joint Staff, and Service Staffs and Agencies — the ability to determine the level and scope of health related support needed for an operation, to develop and evaluate courses of action for probable scenarios, as well as to monitor and maintain health related support at a level which continuously meets the needs of the operation. Most importantly, MSAT will highlight risks associated with limited medical capability or other decisions constraining medical support.

As an analytical tool, MSAT will assist the Commander in the warfighting mission decision process and will be employed at operational commands and in joint and component command centers for assessment of operational risk levels and resource needs. These tools assist joint and component operations planners in assessing and mitigating operational degradation and vulnerabilities. The tools incorporate the interrelated effects of mission requirements, health related and chemical/biological/radiological/nuclear (CBRN) hazards, logistical concerns, medical implications & support needs (e.g. casualty estimation, troop exposures, casualty care and treatment) and deployment of defense resources, for example. The use of MSAT as an analytical tool will allow the commander to conduct comprehensive visualization of the joint battle space in the all environments.

MSAT will provide decision support/course of action analysis tools to the Commander to assess the risk and allocate resources with respect to the joint operational environment. These support tools will be focused at the operational level of warfare. The decision support tool will be able to provide a mechanism to feed research outcomes into the operational decision making cycle so that decisions can be made based on science, rather than just conjecture.

MSAT will support deliberate, crisis planning and analysis and adaptive planning during execution from the strategic planner and Combatant Commander level down to the division / battle group staff / air operations center. The Services will use MSAT to utilize information, access databases and exchange data files in support of planning and analysis. This includes analyzing and identifying CBRN requirements, performing analysis in support of operations planning, and conducting wargaming and training activities. MSAT will have the capability to link to existing databases across, and outside of, the medical community.

The system will enable the operational commander to more efficiently execute “what if” planning scenarios and facilitate the evaluation of courses of action (COAs), to include branches and sequels.

BODY

Task 1. Provide Combatant Commanders enhanced knowledge of the health status of deployed forces.

The MSAT ACTD is investigating use of information concepts and technologies that provide:

Medical Threat and Trending Information: Provide commanders and staff enhanced knowledge of the health readiness of their forces by generating timely information on existing and emerging medical threats and health-related trends during all phases of a Joint/Coalition operation so that when warranted, operational plans may be adjusted on a real-time basis. Protect the force and enhance the mission.

Access to Clinical Information: Provide appropriate and timely access at all levels of care to relevant health related information that has been entered at the initial point of entry/care. Provide identified shortfalls in programs of record to the program for their use in future revisions.

Hazardous Environment Exposure Information: Identify personnel exposed to Chemical, Biological, Radiological, and Nuclear (CBRN) threats and occupational/environmental hazards and provide that information to appropriate leadership to:

- a. Assure exposed personnel can be located, informed, and treated.
- b. Allow the real-time adjustment of operational plans.

MSAT Generated Information Handling: Collect and archive information in a standard manner so that it can be used to develop support plans for future operations and to support post-conflict studies and research.

Decision Support: Provide an advanced decision support tool for medical situational awareness.

Communication with other Agencies: Improve active participation by coalition partners and non-Department of Defense (DoD) agencies/organizations that interpret data to provide information.

Task 2. Conduct a Military Utility Assessment using a military event exercise scenario.

MSAT was demonstrated at Cobra Gold 06 with joint force participation in Thailand. A Military Utility Assessment was conducted utilizing two basic criteria. The first item deals with the question of how important the intended mission is to the outcome of the conflict or the military operation. This question can only be addressed from the integrated perspective of the operational user. The second deals with the issue of how effectively the capability under evaluation performs the intended mission and how suitable is it for use in military operations. To address this second aspect, it is important to define at the beginning of the ACTD those measures of effectiveness and performance (MOEs & MOPs) that will be used to determine effectiveness and suitability. MOEs are high-level indicators of operational effectiveness or suitability. MOPs are technical characteristics that determine a particular aspect of effectiveness or suitability.

TASK 3. Develop Critical Operational Issues & Measures of Effectiveness.

To address effectiveness and suitability, it is necessary to develop a hierarchy of criteria that can be investigated and documented during operational demonstrations. The first step in this process is to establish statements of user needs expressed as Critical Operational Issues (COIs) and normally stated as questions. From these COIs, a high level, and quantifiable, set of measures of effectiveness (MOEs) are derived. These MOEs answer the questions posed by the COIs. Measures of Performance (MOPs), or technical characteristics and tasks, are then developed for each MOE.

The COIs are stated in the MSAT ACTD Management Plan and were developed with full participation Oversight Counsel, the Joint Program Office (to include all the Managers) and a variety of subject matter experts.

The COIs established for the MSAT ACTD are as follows:

Critical Operational Issue 1. (Mission #1) Provide commanders and staff enhanced knowledge of the health readiness of their forces by generating timely information on existing and emerging medical threats and health-related trends during all phases of a joint/coalition operation so that when warranted, operational plans may be adjusted on a real-time basis.

Critical Operational Issue 2. (Mission #2) Provide appropriate and timely access at all levels of care to relevant health related information, which has been entered at the initial point of entry/care.

Critical Operational Issue 3. (Mission #3) Identify personnel exposed to chemical, biological, radiological, nuclear, enhanced explosives and occupational/environmental hazards and provide that information to appropriate leadership to: (a) assure exposed personnel can be located, informed and treated; and, (b) allow the real-time adjustment of operational plans.

Critical Operational Issue 4. (Mission #4) Collect and archive information in a standard manner so that it can be used to develop support plans for current and future operations

and to support studies and research. This COI was not tested during Field Demonstration I.

Critical Operational Issue 5. (Mission #5) MSAT shall provide an advanced decision support tool for medical situational awareness.

Critical Operational Issue 6. (Mission #6) Improve active participation by other than DOD agencies and organizations that interpret data to provide information.

TASK 4. Develop and refined requirements.

The MSAT ACTD began its assessment approach on March 15-17 2005, when US Pacific Command (J07) hosted the MSAT Operational Requirements Conference at the Navy Lodge on Ford Island, Pearl Harbor, Hawaii. The format for the conference included inviting the potential user community to participate in a mission analysis and requirements generation process. The sixty-seven conference participants represented a broad range of prospective users from across USPACOM and its Components, other Unified Commands, OSD, all Services, as well as governmental and non-governmental agencies. The format of the conference was that of a facilitated working group.

To support the effort, the JPO developed a preliminary set of Critical Operational Issues (COIs) from the MSAT Implementation Directive and previous briefings. The language of the COIs was standardized before the start of the conference. These COIs were used to represent the critical mission functions of the MSAT decision support tool. Using the COIs as the starting point, the JPO then conducted a task analysis using a dendritic process that expanded the missions into functional requirements (also referred to as measures of effectiveness) and technical requirements (also referred to as measures of performance). This pre-conference mission analysis provided the framework and starting point for the conference participants to examine each critical mission.

The result of the conference was the validation of six Critical Operational Issues, as well as twenty-six higher level Measures of Effectiveness (MOEs) and 170 constituent Measures of Performance (MOPs). The Operational Manager (OM) formed the Operations and Evaluation Integrated Product Team (OEIPT) headed by the OM and comprised of members from the operational community and staffs of the OM office and the office of the Operational Test agency. The OEIPT worked electronically to refine the COIs, MOEs and MOPs

TASK 5. Conduct field trials and prototype assessments.

Three field trials and several prototype assessments are planned within the demonstration phase of the MSAT ACTD. The Field Trials will be conducted with representative test players from all Services, the Combatant Commander and Joint Task Force (JTF) level. The test players are to be trained in the use of the MSAT tools. The test players will use MSAT in accordance with the CONOPS for the Combatant Commander and JTF. The

Field Trial will enable observations of the capabilities and features, including the ability to accomplish the required information processing. The Field Trial will demonstrate that MSAT can operate as expected upon the intended Service-provided infrastructure and answer the applicable COIs. A Test Report will be prepared based on evaluations and observations of system performance. Testing will be conducted in an operationally realistic environment with typical users doing real tasks with a representative workload. Concept demonstrations will be done as needed.

TASK 6. Participate in US Pacific Command-sponsored Pandemic Influenza Table Top Exercise.

The purpose of this prototype assessment was to document feedback from subject matter experts (SMEs) on current capabilities provided by the MSAT MSE application. The objectives for this assessment were to obtain feedback from SMEs on current business practices for information management and decision making at the JTF and Combatant Commander (COCOM) level and elicit user insight on ways the MSE application could improve information management and decision making for the commander. In addition, we sought opportunities to obtain reactions and comments from SMEs on the appearance and layout of the prototype, along with providing opportunities for feedback on additional areas where data fusion could be attempted.

Task 7. Participate in and demonstrate MSAT at the Joint Military Exercise - Cobra Gold 2006.

The first MSAT ACTD field trial occurred as part of Cobra Gold 2006 (CG06). The MSAT MSE System Assessment was conducted in conjunction with the USPACOM-sponsored CG06 Command Post Exercise (CPX) from 17 to 24 May 2006 in Nakhon Nayok, Thailand. The I Corps surgeon and staff functioned as the Combined Task Force (CTF) surgeon and were the primary MSE users for the System Assessment. I Corps Surgeon and some staff were trained in garrison at Fort Lewis with just-in-time training provided in Nakhon Nayok, Thailand by the OM. Field trial I integrated MSAT technologies into a full capabilities package for military operations. Cobra Gold 06 (CG 06) CPX provided a realistic U.S. Pacific Command (USPACOM) contingency scenario for Peace Enforcement Operations (PEO) and Consequence Management (CM) providing the CTF Surgeon a near real-time view of the medical battlespace and decision support capability. It also provided the CTF Surgeon the ability to participate in the CPX along with his "line" counterparts using data driven by the line's simulator (JTLS) and translated into decision support information for the Surgeon. A System Assessment Report was prepared by the OTA and signed off as of 18 July 2006 (See Appendix A). The report provides the data for the conclusions and recommendations in this report. The CPX Systems architecture is below.

KEY RESEARCH ACCOMPLISHMENTS

The MSAT concept will work with all Net-centric Medical and Line systems as they mature, using a Service Oriented Architecture (SOA) and web services, as demonstrated by the following accomplishments:

- Provided visual analysis of medical assets/threats and various reports which will be displayed in a WEBCOP-like environment. This was accomplished the PACOM Cobra Gold Joint Exercise held in Thailand.
- Demonstrated MSAT can ingest JMeWS II data (and thus any compliant data) through the use of simulated data-generated to represent casualties and medical unit SITREPS which were fed into JMeWS and displayed in MSE)
- Accessed data using a Thin Client methodology as required by state-of-the-art standards and policies, utilizing standard laptop computers.
- Showed situational awareness and interoperability through the use of the Commercial/Joint Mapping Tool Kit (C/JMTK).
- Demonstrated the first time medical use of Blue Force Tracking from a GCCS-J Track Server.
- Demonstrated the potential for tracking current forces, threats, and medical information in a COP (portrayed weather overlays, blue force tracks, medical units)
- Provided access to unclassified AFMIC documents that might be relevant to the user (query capability using web-services relationship with AFMIC unclassified database).
- Demonstrated Relevant Decision Support (DS) Potential for MSAT
 - Showed DS by incorporating FLUSURGE modeling capabilities (planning tool used by CDC)
 - Provided a rudimentary clinical and epidemiological decision support capability (H5N1 Human-to-human transmission algorithm) (accomplished)
 - Validated the concept of the MSE as an approved pathway to GCSS, GCCS, and/or JC2 to provide information on the C2 decision-makers platform
 - Gather Lessons Learned to refine the tool's capabilities for future spirals.

REPORTABLE OUTCOMES

The following consolidated Measures of Effectiveness/Measures of Performance – (MOE / MOP) assessment resulted from participation in the Cobra Gold Exercise held in Thailand:

COI 1 (MISSION NO. 1). Provide commanders and staff with enhanced knowledge of the health readiness of their forces by generating timely information on existing and emerging medical threats and health-related trends during all phases of a joint/coalition operation so that when warranted, operational plans may be adjusted on a real-time basis. Protect the force and enhance the mission.

MOE 1.2. Commander has knowledge of unit/units and organizations in areas of responsibility (AOR). Population at Risk (PAR).

Methodology. During the System Assessment, four events from the MSEL were injected that stimulated MSE system users to perform current Medical Operations functions, locate medical units with specific capabilities in the AOR, identify the location of medical specialists, and locate medical supplies and equipment.

MOP 1.2.1. MSAT identifies units assigned, attached, or supported.

MOP 1.2.2. MSAT identifies units by name/description and location.

MOP 1.2.4. MSAT presents situation report (SITREP)/medical SITREP summary from the combatant command or higher. Includes the ability to view all levels of SITREPs/casualty reports/operations reports/bed status reports.

MOP 1.2.5. MSAT provides access to aggregated data on personnel assigned to unit/units and organizations in AOR, as well as units of previous assignment for those personnel.

MOP 1.2.8. MSAT provides information about coalition forces (unit location), coalition medical facility capabilities, and host nation medical capabilities.

MOE 1.3. Commander has knowledge of existing health threats.

Methodology. MSEL events injected to support this criterion required users to identify specific medical threat areas on the COP map, to locate medical units within the threat area, and to analyze disease non-battle injury (DNBI) and epidemiological data to support disease surveillance alerts. Users were also required to review and analyze authoritative data sources, including data from the AFMIC to identify endemic diseases within the local area.

MOP 1.3.1. MSAT shall access and provide user information on poisonous animals and plants. Natural and environmental (plants and animals).

MOP 1.3.2. MSAT allows a query of the location of toxic industrial chemical and toxic environmental chemical sites and information on occupational hazards.

MOP 1.3.4. MSAT provides commanders and staffs with data on potential endemic disease within the AOR.

MOP 1.3.5. MSAT provides information on recent disease outbreaks.

MOP 1.3.6. MSAT provides climatological information.

MOE 1.5. MSAT provides the commander with risk assessment and decision support tools, allowing intervention and recommending appropriate courses of action.

Methodology. Events from the MSEL required MSE operators to use the MSE epidemiological surveillance function to identify specific environmental hazards on the COP map and assess and predict the risk of heat injury to troops in the AOR. MSE users also had to view environmental weather data to ascertain the relative humidity and temperature within the AOR as well as other authoritative data sources to identify the host nation health policy associated with the infectious disease.

MOP 1.5.1. MSAT provides the ability to access planning systems, e.g., Joint Operation Planning and Execution System, Global Command and Control System, and Global Combat Support System.

MOP 1.5.4. MSAT fuses the data on emerging medical threats and the data on current operations to develop courses of action, to include modifying existing plans.

COI 2 (MISSION NO. 2). Provide appropriate and timely access at all levels of care to relevant health-related information that has been entered at the initial point of entry/care.

MOE 2.1. Authorized personnel are provided appropriate access at all levels of care to relevant health-related information and updates as agreed to.

Methodology. MSEL events required MSE users to use the Medical Operations, Medical Unit Status module to identify appropriate MTFs with the necessary capabilities to treat specific patients. Users then used the Patient Reports, Patient Tracking, module to locate and provide required status updates on patient condition and evacuation statuses.

MOP 2.1.2. MSAT provides linkages to programs of record to obtain updates on relevant health-related information.

COI 3 (MISSION NO. 3). Identify personnel exposed to chemical, biological, radiological, nuclear, enhanced explosives, and occupational/environmental hazards and provide that information to appropriate leadership to (a) assure exposed personnel can be located, informed, and treated and (b) allow the real-time adjustment of operational plans.

MOE 3.2. Commander can identify those potentially exposed.

Methodology. MSEL events required MSE operators to use multiple MSE modules to provide relevant information about unit locations, suspected disease outbreaks, and identification or classification of the disease threat to support decision-making. The MSE used Epidemiology, DNBI, Syndromic Surveillance, and Reportable Disease modules to identify and analyze the symptomatology diseases that caused alerts within the MSE. Furthermore, MSE users had to identify units within contaminated areas and understand the nature of the disease requiring them to use authoritative data sources within the Environmental Hazards module.

MOP 3.2.2. MSAT identifies when exposure risks occur (time-sensitive exposure data).

MOE 3.3. Commander can identify those exposed.

Methodology. MSEL events required MSE operators to use multiple MSE modules to provide relevant information about unit locations, suspected disease outbreaks, and identification or classification of the disease threat in order to support decision-making. The MSE used Epidemiology, DNBI, Syndromic Surveillance, and Reportable Disease modules to identify and analyze the symptomatology diseases that caused alerts within the MSE. Furthermore, MSE users had to identify units within contaminated areas and understand the nature of the disease requiring them to use authoritative data sources within the Environmental Hazards module.

MOP 3.3.1. MSAT can ascertain the intensity and duration of exposure to the PAR.

COI 4 (MISSION NO. 5). MSAT shall provide an advanced decision support tool for medical situational awareness.

MOE 5.1. MSAT shall provide advanced multimodal interface that facilitates intuitive understanding of the situation.

Methodology. MSEL events required MSE operators to use multiple MSE modules to locate medical threats on the COP map and visualize relevant information about unit locations, suspected disease outbreaks, and identification or classification of the disease threat in order to support decision making. The MSE used Epidemiology, DNBI, and Reportable Disease modules to identify and analyze the symptomatology of diseases that caused alerts within the MSE. Furthermore, MSE users had to identify units within contaminated areas and understand the nature of the disease requiring them to use authoritative data sources within the Environmental Hazards module.

MOP 5.1.1. Advanced global information system.

MOP 5.1.2. Visualization capability.

COI 5 (MISSION NO. 6). Improve active participation by other than Department of Defense agencies and organizations that interpret data to provide information.

MOE 6.2. MSAT increases active participation by organizations using data for provision of medical care to US casualties in non-US facilities and non-US casualties in US facilities.

Methodology. MSEL events required MSE operators to use the Medical Operations, Medical Unit Status to view host nation medical facilities on the COP map and understand their capabilities for treating US and coalition forces.

MOP 6.2.1. MSAT identifies organizations providing medical care.

CONCLUSIONS

MSAT ACTD concepts and technologies have the potential to significantly enhance force health protection, decision support, situational awareness, and decision-making for the Force Surgeon and their staff. It has the potential to provide the COCOM, JTF surgeons and other operational headquarters a medical COP previously not available. As such, MSAT has a high degree of military utility.

The comments provided by the CJTF surgeon concluded that MSAT MSE proved to be a valuable tool for evaluating unit, personnel and equipment status across the theater. His comments further stated that the MSE ensured that wounded soldiers will be evacuated to the appropriate level of care and that this translates into “lives saved”. Further, he stated that when looking beyond injuries, the MSE provided epidemiological tools that can evaluate disease patterns and alert health care providers of impending or emerging threats to the health of the command. It was his opinion that this tool can turn data into actionable medical knowledge that will allow for rapid medical intervention before combat effectiveness of the force is degraded.

MSAT will provide the joint warfighting Commander and his Command Surgeon and staff with the ability to:

- Efficiently determine health service support requirements for planned or evolving operations throughout the taxonomy of care
- Assess courses of action to improve effectiveness and evaluate risks in medical readiness
- Deliver decision support tools to determine and assess the operational effects and impacts of all endemic threats and environmental hazards
- Provide analyses and plans (e.g., OPLAN annex, staff estimate, vulnerability analysis, risk assessment),
- Integrate with, make use of, and federate with transport, intelligence, movement and dispersion and hazard information systems and models for access to real-time data and hazard predictions.

MSAT will provide an advance planning and analysis capability, as well as a near real time dynamic staff action support tool capability. MSAT will accurately depict the warfare environment including the effects on personnel, equipment, and operations. MSAT will provide a computer-based federated software system capable of providing deliberate planning support for the development of operational plans and near real time decision aids in a combat environment. The federated capability approach will allow the Federation to be tailored to specific user needs. MSAT will consist of a core system that will federate with other data collection, modeling and simulation tools including those used in COA and are interoperable with other systems.

As a federated structure that is aligned with other DOD data collection, modeling and simulation applications, MSAT will be capable of accessing certified databases that are used across commodity areas, other warfighting domain databases throughout DOD, and other databases used by selected Interagency organizations.

REFERENCES

- Department of Defense (DoD) Directive 8320.2 Subject: Data Sharing in a Net-Centric Department of Defense, dated December 2, 2004.
<http://www.dtic.mil/whs/directives/corres/html/83202.htm>
- Office of Assistant Secretary of Defense (OASD) for Networks and Information Integration (NII), Net-Centric Checklist, Version 2.1.3 dated May 12, 2004 http://www.dod.mil/nii/org/cio/doc/NetCentric_Checklist_v2-1-3_May12.doc
- Department of Defense Architecture Framework (DoDAF) ver 1.0 dated February 9, 2004 http://www.dod.mil/nii/doc/DoDAF_v1_Memo.pdf
 - http://www.dod.mil/nii/doc/DoDAF_v1_Volume_I.pdf
 - http://www.dod.mil/nii/doc/DoDAF_v1_Volume_II.pdf
 - http://www.dod.mil/nii/doc/DoDAF_v1_Deskbook.pdf

APPENDICES

1. MSAT Implementation Directive, Dec 2004
2. After Action Summary MSAT ACTD Requirements Conference, April 05
3. MSAT Management Plan, September 2005
4. USAMEDDBD Prototype Assessment for the Medical Situational Awareness in the Theater Medical Support Enhancement, 5 December 2005
5. USAMEDDBD Event Design Plan May 2006
6. DRAFT Operational Manager's Concept of Operations, June 2006
7. USAMEDDBD System Assessment Report, July 18, 2006
8. Advanced Concept/Joint Capability Technology Demonstrations (AC/JCTD) website, ACTD Guidelines, <http://www.acq.osd.mil/actd/guidelns.htm>

9. ACRONYMS AND ABBREVIATIONS

AAR	After Action Report
ACTD	Advanced Concepts Technology Demonstration
AFMIC	Armed Forces Medical Intelligence Center
AIS	Automated Information System
AMEDD	Army Medical Department
AOR	Area of Responsibility
C2	Command and Control
C4I	Command Control Communication Computer & Intelligence
CAT	Crisis Action Team
CBRN	Chemical, Biological, Radiological and Nuclear
CDR	Commander
CENTRIXS	Combined Enterprise Regional Information Exchange System
CFAST	Collaborative Force-Building Analysis, Sustainment and Transportation
CG06	Cobra Gold 2006
CJTF	Combined Joint Task Force
CM	Consequence management
COA	Course of Action
COCOM	Combatant Command
COI	Critical Operational Issue
CONOPS	Concept of Operations
COP	Common Operational Picture
COWAN	Coalition Operational Wide Area Network
COTS	Commercial Off The Shelf
CPX	Command Post Exercise
CTF	Combined Task Force
DASD(FHP&R)	Deputy Assistant Secretary of Defense (Force Health Protection and Readiness)
DBSS	Defense Blood Standard System
DHS	Deployment Health Services
DMLSS	Defense Medical Logistics Standard System
DNBI	Disease, Non-Battle Injury
DoD	Department of Defense
DSS	Decision Support System
DST	Decision Support Tool
DT	Developmental Testing

DUSD (AS&C)	Deputy Under Secretary of Defense for Advanced Systems & Concepts
EUE	Extended User Evaluation
FY	Fiscal Year
GCCS	Global Command and Control System
GCCS-J	Global Command and Control System - Joint
GCSS	Global Combat Support System
GEOFile	Geographical Location
GSORTS	Global Status of Resources and Training System
GWOT	Global War on Terrorism
H2H	Human to Human
HAG	High Assurance Guard
HQ	Headquarters
HSS	Health Service Support
IMUA	Interim Military Utility Assessment
IO	International Organization
JFCC	Joint Force Component Command
JMAT	Joint Medical Analysis Tool
JMeDSAF	Joint Medical Semi-Automated Forces
JMeWS II	Joint Medical Workstation II
JOC	Joint Operations Center
JOPEs	Joint Operation Planning and Execution System
JPO	Joint Program Office
JTF	Joint Task Force
JTLS	Joint Theater Level Simulation
JWICS	Joint Worldwide Intelligence Communications System
JWARN	Joint Warning and Reporting Network
METOC	Meteorology and Oceanography
M&S	Modeling & Simulation
MOE	Measure of Effectiveness
MOP	Measure of Performance
MOS	Medical Occupational Specialty
MSAT	Medical Situational Awareness in the Theater
MSE	Medical Support-Enhanced
MSEL	Master Scenario Events List
MUA	Military Utility Assessment
NBC CREST	Nuclear, Biological and Chemical Casualty and Resource Estimation Support
NCES	Net-Centric Enterprise Services
NGO	Non-governmental Organization
NHRC	Naval Health Research Center
NIPRNET	Non-Secure Internet Protocol Router Network
OE	Oversight Executive
OEIPT	Operational Evaluation Integrated Product Team
OG	Oversight Group
OM	Operational Manager
OPLAN	Operations Plan
OSD	Office of the Secretary of Defense
OT	Operational Test

OTA	Operational Test Agency
PACOM	Pacific Command
PAR	Population-at-Risk
PEO	Peace Enforcement Operations
POR	Program of Record
PVO	Private Organization
SOA	Service Oriented Architecture
SIPRNET	Secure Internet Protocol Router Network
SITREP	Situation Report
SME	Subject Matter Expert
T&E	Test & Evaluation
TM	Technical Manager
TMIP	Theater Medical Information Program
TPFDD	Timed Phased Force Deployment List
TRAC2ES	TRANSCOM Regulating and Command and Control Evacuation System
TS/SCI	Top Secret/Sensitive Compartmental Information
TTP	Tactics, Techniques, and Procedures
TUCHA	Type Unit Characteristics
UDOP	User Defined Operational Picture
USAMEDDBD	United States Army Medical Department Board
USAMRMC	United States Army Medical Research & Materiel Command
USPACOM	US Pacific Command